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have certain limits; that variations can arise from natural selection, or physical changes, only when these act in given directions and for a given time, after the expiration of which, whether in the individual or the group, if sudden death do not intervene, all changes must be degradational in character. Physical causes, and the struggle for existence can no longer improve the vitiated organization when it has passed this period. Its death is decreed as certainly as its line of developmental changes must have been before it was born, and whatever agency other laws may have, they can only act with more or less force and velocity in these predetermined paths of progress and decline, or cut them short by the destruction of the organization. — A. HYATT.

THE TORREY BOTANICAL CLUB, which, under the auspices of its President and Nestor, meets at the Herbarium in Columbia College, began with the year to issue its "Bulletin," in monthly numbers of four pages each. The notices and memoranda thus issued relate chiefly to the local flora of New York, which is the special charge of the Club; but matters of more than local interest are touched upon, making it well worth the attention of our botanists throughout the country. For example, in the February number, Mr. Leggett, the editor, explains the anomaly of *Lepidium Virginicum* having accumbent cotyledons, contrary to all the rest of the species, showing that what may be termed the petioles of the flat cotyledons, in line with the radicle, and in which the bend is made, are in the position answering to incumbent, and so the cotyledons take the accumbent position by a twist of ninety degrees. The "Bulletin" is furnished, upon application to the editor, 224 East Tenth street, New York, for a dollar a year, or seven copies for five dollars.

FOSSIL PLANTS FROM THE WEST.* — This report closes Dr. Hayden's report reviewed by us in March, 1870. By some oversight we confused it with a former paper of Professor Newberry, and thus passed by some of the most important results of the explorations. The first portion is a general review of the geology of North America, and as these government reports, notwithstanding their wide distribution, generally have but few non-scientific readers, we shall republish this for the benefit of our subscribers in some succeeding number.

The chapter on the "Cretaceous Flora" gives a concise summary of the various government expeditions which have made collections of the plants of this period. The conclusions reached are identical with those which we have already quoted in the review referred to above in March, 1869, page 41.

Among the Miocene plants Dr. Newberry finds *Onoclea sensibilis*, a species undistinguishable either from the living forms of this species or those found in Europe, only on the island of Mull, off the west coast of Scotland. This and the large number of other identical miocene species, lead to the inference that North America and Europe were connected by

* Report on the Cretaceous and Tertiary Plants. By Professor J. S. Newberry.

an intermediate continent. "If this inference should be confirmed by future observations, we should then see how the eocene tropical or subtropical flora of Europe was crowded off the stage by the tropical flora of the miocene, which latter accompanying a depression of temperature, had migrated from America, while the eocene flora had retreated south and east, and is now represented by the living Indo-Australian flora, characterized by its *Hakeæ*, *Dryandreæ*, *Eucalypti*, etc., etc., which form so conspicuous an element in the eocene flora of Europe." Instances in which the miocene flora occurs on the McKenzie River, Disco Island, Iceland, and the Island of Mull are then brought forward to show that this land connection must have occurred to the northward, and that the country was then in possession of a milder climate than now reigns in the same latitude.

In discussing the causes which produced this difference of climate Professor Newberry gives his adherence to none in particular, but thinks that the deflection of the Gulf Stream would be the most natural method and at the same time places an objection in the path of the astronomical theorists, which they will find it difficult to combat. It will be remembered by our readers that many of the geologists of the day account for the former presence of a warm climate in the Arctic region, by supposing that the earth has, in former times, passed through a warmer region in space. This cannot be assumed to be the cause in the present instance; for any "cosmical cause, producing a general elevation of temperature on the earth's surface, would have given us a tropical flora on the Upper Missouri, whereas we find in the miocene flora there, as yet no tropical plants."

RELATIONS OF THE ROCKS IN THE VICINITY OF BOSTON.*—Professor Shaler regards all the syenites of this vicinity as of sedimentary origin, and rejects the old theory of their Plutonic origin. In this he is supported by the late discoveries of the Eozöon in this vicinity, and by the researches of Professor T. Sterry Hunt, published in the last number of the "American Journal of Arts and Sciences." The section of the rocks in the neighborhood of Quincy is described as consisting of a layer of quartzites "to the north of the Quincy Syenite Hills, a hidden section of about three hundred feet thickness, and the Braintree series of two hundred feet. Another section of the Chesnut Hill Reservoir is also described, composed of Cambridge slates for seven hundred feet, Roxbury conglomerate for ten feet, thirty feet more of slate and conglomerate again extending to the edge of the Charles River flats in Brighton, where they give place to a sandstone.

* Abstract of Some Remarks on the Relations of the Rocks in the Vicinity of Boston. By N. S. Shaler. Proc. Boston Soc. Nat. Hist., vol. xlii. Dec. 3, 1869. Pamph., pp. 7.